

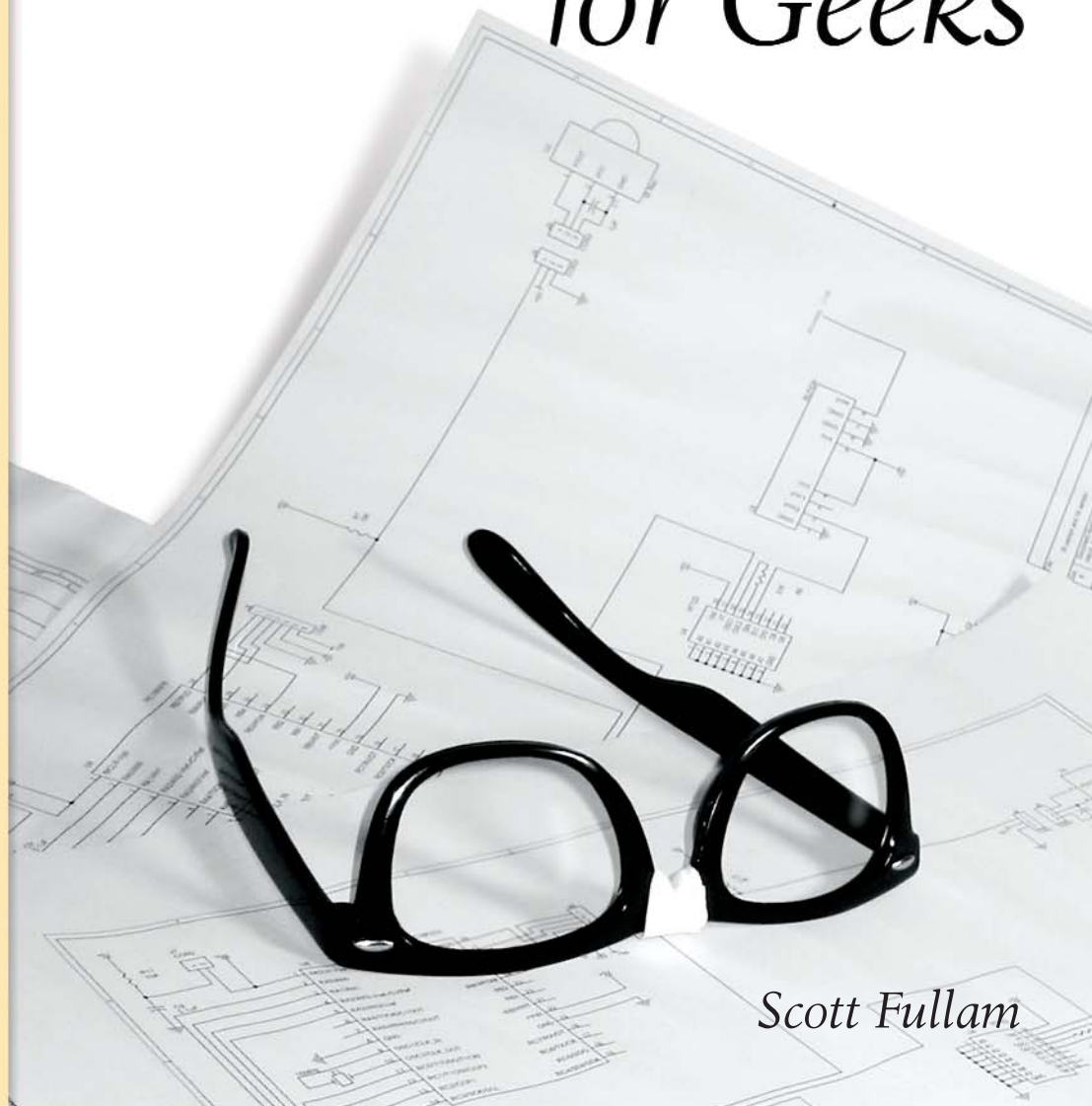
Learn how to:

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HARDWARE HACKING PROJECTS *for Geeks*



Scott Fullam

Getting Free Parts

Most semiconductor companies offer free samples of their parts. Check their web sites for details on the parts as well as on sample policies. Usually you need to answer a few questions about your application and potential order volume.

I was able to get two samples of the National Semiconductor temperature sensor and the Linear Technology A/D converter for free simply by visiting their web sites and filling out a simple request form.

Project Overview

This project uses the SitePlayer embedded web server, which has a special serial port that can be easily connected to an analog-to-digital converter (ADC). I chose the LTC1098 ADC because it was easy to interface to SitePlayer and it had two channels, enough to capture the coffee level and the temperature.

You will construct the electronics, modify a coffeemaker, and program a tiny standalone web server that will monitor your coffee.

A simple block diagram of the system is shown in [Figure 15-1](#). The SitePlayer board has built-in web server software (which saves you from having to write it yourself) and an interface port to the ADC circuit board. The ADC circuit board performs the actual temperature and liquid measurements. The SitePlayer has its own IP address and responds to HTTP requests.

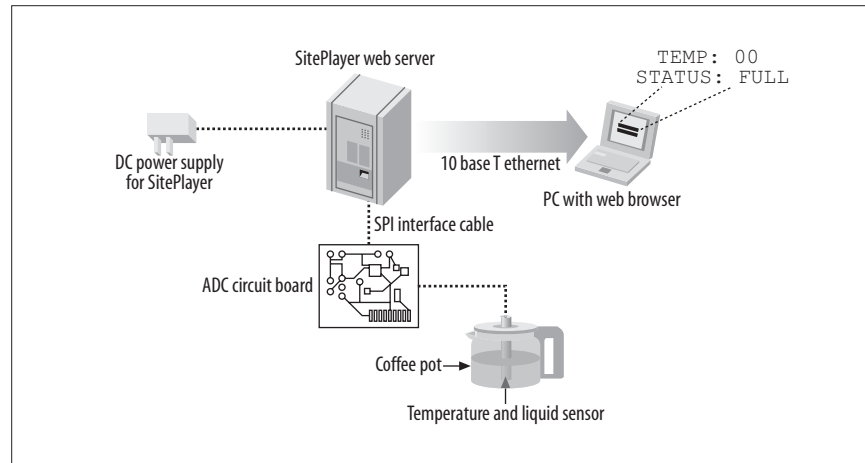


Figure 15-1: Internet coffeemaker block diagram

Hardware Assembly Instructions

This project requires you to build a simple circuit board and then attach it to the mini web server. You will build a heat sensor and glue it into place at the end of the plastic tubing. Finally, you will modify a regular coffee pot so that you can insert the probe.

1. Construct and attach the ADC circuit board

First, you'll build a small circuit card to hold the analog-to-digital converter and the interface connectors. Then you will connect that circuit to the mini web server.